17.0 Lighting

17.1 Intent

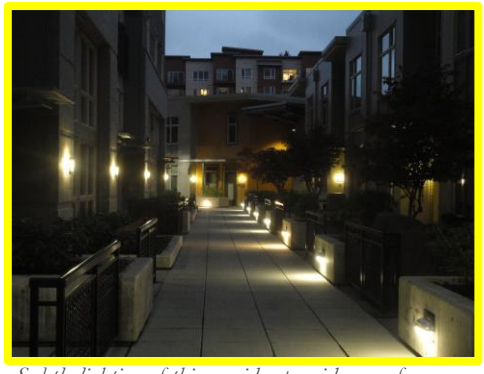
The intent of this Chapter is to establish a hierarchy of lighting designs and illumination levels that provide an attractive visual element that supports and enhances this developing urban environment, addresses the safety and security of both pedestrian and vehicular traffic beyond daylight hours, and protects the night sky.

Lighting contributes to the urban environment, particularly the Public Realm, not only in the nature of light, but the nature of the fixtures. Streetlights, lit bollards, sconces, and gooseneck lamps, for example, all have a presence that shape the urban character, whether they are illuminated or not. As urban design elements, light fixtures contribute to neighborhood character and create Pedestrian Friendly public spaces, and thus should be selected on their ability to achieve the Central Issaquah vision of a vibrant, mixed-use and active urban environment.

A successful urban environment relies on being active most of the day and into the evening; which can be a challenge particularly during the long nights of the Pacific Northwest winters.

Appropriate types and locations of lighting are necessary to support a Pedestrian Friendly environment for people to walk and cycle and use Community Spaces beyond daylight hours. A hierarchy and quality of light, the right

Lights in the plaza's canopy allows this area to be used at night.



Subtle lighting of this corridor provides a safe, attractive and functional area after dark.

mix of uniform illumination and special feature lighting that address the safety and security of pedestrian, cyclist and vehicular traffic also have a strong positive impact on the overall quality of the nighttime environment.

While establishing a high quality lighting environment that provides the right balance between appropriate light level, high color quality light, uniformity and special focus or feature lighting, glare control must also be considered as a way of protecting the night sky. Illumination of the entire volume (horizontal and vertical elements) is a key ingredient in perception of the space; illuminating only the horizontal (ground) plane will result in uninteresting and potentially dangerous spaces. While site lighting is necessary and beneficial for these reasons, it must be used in such a way that it does not contribute to sky glow or create situations where lights are visible beyond the site.

Using lit bollards helps shape the Public Realm whether illuminated or not.

Lighting is used to serve as an architectural element.

These lights serve to light the path and provide architectural interest. A different style light is used for the parking lot.

17.2 General Lighting Standards

A. Lighting shall ensure a safe, attractive, functional environment that is active after dark when urban neighborhoods tend to be most active;

B. Lighting shall assist users in intuitively understanding and travelling through Central Issaquah;

C. Lighting shall provide for the needs of residents, businesses, pedestrians, and bicyclists while minimizing negative lighting impacts and maintaining the dark sky elements of the natural Issaquah environment by using the most effective and innovative sustainable lighting power minimization;

D. Lighting design shall contribute to the Public Realm by selecting fixtures and locations that contribute to the urban form such as lit bollards, sconces and gooseneck lamps which help shape the urban character whether illuminated or not.

E. Lighting design shall maintain the dark sky elements of the natural Issaquah environment by avoiding impacts which contribute to sky glow and creating situations where lights are visible beyond the site.

F. Lighting design shall use light levels and fixture designs to respond to and support the anticipated range of activities, be compatible with the

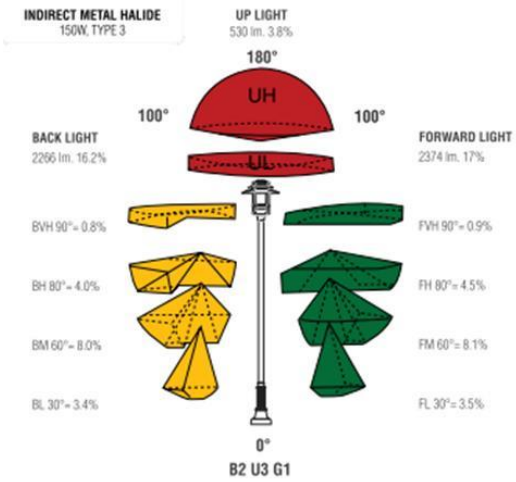
surrounding area, and limit whatever is necessary to provide for the use and safety of the likely range of users.

G. Lighting shall be used to emphasize and serve as architectural elements.

H. Lighting shall be used to illuminate the entire volume (horizontal and vertical elements) as a key ingredient in perception of the space. Illuminating only the horizontal (ground) plane will result in uninteresting and potentially dangerous spaces.

I. Illumination levels shall vary depending on activities. The overall development illumination shall be the minimum low light level necessary to achieve its purpose. Specific elements can be emphasized with slightly higher light levels such as primary building entries, plazas, and pedestrian circulation paths such as stairs, ramps, abrupt changes in walking direction, crossing vehicle lanes, or other changes in elevations that can become trip hazards. See the Illumination Level Standards Table 17 A.

17.3 BUG (Backlight, Uplight, and Glare) Standards



Example of the BUG (backlight, Uplight and glare) rating for a lighting fixture. While a large portion of uplight is undesirable, a small portion is useful to cast a soft light on the undersides of tree canopies, or the façade of a nearby building. The U in the BUG rating can be up to 3 for lampposts and bollards in pedestrian zones. For very urban plazas it can be up to 4 at the discretion of the reviewer. For street lighting, the U should be equal to 0. For spaces that are both street and pedestrian zones such as a woonerf, the BUG rating can be up to a 3.

	 Esplanade			
BUG, U=0, G≤2 Emits no light above 90 degrees	BUG, U=2, G=3 Zonal lumens from 90-180 degrees = 11-50	BUG, U=3, G=1 Zonal lumens from 90-180 degrees =51-500	BUG, U=4, G=2 Zonal lumens from 90-180 degrees=501-1000	BUG, U=5 Zonal lumens from 90-180 degrees > 1,000
Acceptable for roads and all pedestrian areas	Acceptable in Pedestrian areas	Acceptable in Pedestrian areas	Acceptable in the most urban plaza areas	Not acceptable in any area

Note that similar looking fixtures from other manufacturers or even from the same manufacturer may have different BUG ratings. Fixture specific photometry must be checked to determine the BUG rating.

The fixtures shown here are for illustration purposes only and are not meant to recommend or discourage the use of any specific manufacturer.

17.4 Design and Fixture Standards

A. Lighting shall be scaled to the pedestrian. Pole heights shall not exceed 15 feet in height.

B. Lighting of pedestrian walkways and routes shall be provided where stairs, curbs, ramps, abrupt changes in walk direction, and crossing vehicle lanes occur.

C. Lighting shall be collaboratively designed so that its impacts are not compounded in portions of the site by overlapping illumination patterns from Circulation Facilities, Public Spaces, Community Spaces, the

Pedestrian level lighting on walkways and stairs ensure safe travel.

building (interior and exterior sources), adjacent off-site lighting, and parking facilities.

D. Night time illumination of public art, monuments, water features and flags is encouraged but should be done in a thoughtful way that does not create unnecessary glare or sky glow. This type of non-essential illumination will be controlled with a timing device to turn the lights off or to a substantially reduced level after close of business. Motion sensor lighting may be necessary for security and some uses must function all night.

E. Light poles can be located in pairs directly across the vehicular Circulation Facilities from each other or staggered, as appropriate to the Neighborhood character.

17.5 Circulation Standards: Streets

A. Light fixture style, height, and placement shall be in keeping with the intended scale and character of the Neighborhood.

B. Light poles shall be located in pairs directly across the street from each other or staggered, as appropriate to the streetscape and Neighborhood character.

C. Light poles and fixtures shall be coordinated with the tree layout and other street elements, especially those that impact the fixture's ability to illuminate the intended area.

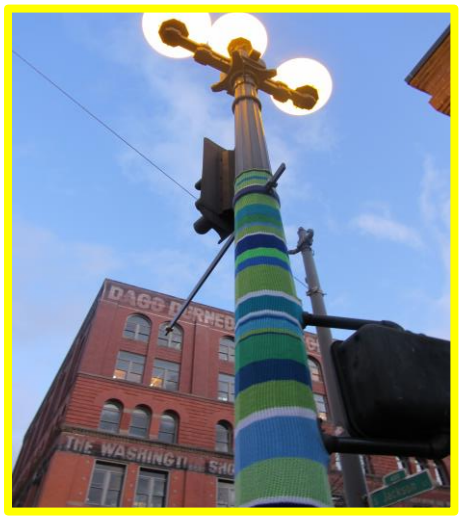
17.6 Circulation Standards: Pedestrian, Bicycle, and Trail

A. Trail and pedestrian only routes should have lighting that creates a sense of safety without adversely affecting the surrounding uses, such as abutting residences and critical area habitats.

B. Poles may be located on just one side of the pedestrian and bicycle facilities or paired or staggered like vehicular Circulation Facilities, as is appropriate to the character of the facility, urban design, and adjacent uses.

C. Where pedestrian and/or bicycle facilities are part of Circulation Facilities that also have a vehicular

Festival lighting creates a glow for night time activities.



Light poles can serve dual purpose by including hanging baskets or art, such as yarn graffiti.

Canternary lights (lights on cables, hanging between buildings or poles) form a kind of ceiling

component, light fixtures shall be provided that meet the needs of all users rather than providing light fixtures for each user separately.

D. Pedestrian and bicycle Circulation Facilities, without a vehicular component, such as Multi-purpose Trails, Urban Trails, and Secondary Walks, shall have a low but uniform light level to create a feeling of safety. Appropriate lighting may be provided by building mounted lights rather than separate light fixtures if appropriate to the character of the space.

E. Pedestrian and bicycle facilities, without a vehicular component, that are intended for use after dark should have a low but uniform light level on the path and slightly spilling over that meets minimum safety levels for outdoor lighting (IMC 18.07.107).

F. Lighting within and adjacent to critical areas shall have no spillover light into the critical area in accordance with outdoor lighting requirements (IMC 18.07.107). Trails within and near Critical Areas should intentionally be left dark to protect the natural habitat for nocturnal animals and wildlife. Bridges within Critical Areas may have a low level of the light for safe use, and the light should be contained and focused on the bridge deck if an adjustment is granted from the outdoor lighting Code, IMC 18.07.107 that does not allow lighting in Critical Areas.

G. Consider adding outlets in Circulation Facility lights to accommodate seasonal decorating and other special, festive events.

This pedestrian, bike and vehicle Circulation Facility provides lighting that meets the needs of all users. (pedbikeimages.org/Dan Burden)

Lighting within or adjacent to critical areas shall have no spillover light into the critical area.

Lighting can add to seasonal decorating.

Lighting on the gate and fence create interest in this Community Space.

17.7 Community Space Standards

A. The walking surface of primary walkways in Community Spaces shall be lit and extend it to elevations high enough to illuminate the faces of pedestrians, approximately six (6) feet. Spillover lighting from adjacent sidewalks, streets, buildings, etc. may fulfill this need.

B. Along and within Community Spaces, lighting shall be provided that is pedestrian scale and contributes to the urban character.

C. Festive or special lighting should be encouraged within Community Spaces. This may include lights that are interesting, entertaining, and programmable, but which provide little additional illumination, such as LEDs.

D. Community Space lighting should have low levels of uniform illumination for safety, with higher levels for focal points or areas of high activity.

E. Children's play areas shall be illuminated if they are intended for use after dark. Lights should be controlled so that they are "off" after hours.

F. Recreation areas not intended for use after dark shall not be illuminated.

The variety of lights creates interest in this Community Space.

17.8 Parking Standards

A. Lighting on private properties, including surface parking lots, structured parking, and underbuilding parking, shall meet the requirements of the Outdoor Lighting Code (IMC 18.07.107).

B. Lighting in exposed parking areas, including surface parking lots and garage rooftops shall be designed and installed to avoid direct light spill, glare, and reflection of light.

C. Structured Parking, including the roof, shall ensure no direct light spill from fixtures or vehicles and shall minimize glare spilling from garage fixtures and vehicles on to the adjacent roadways, off-site views, and residential areas, and eliminate or significantly reduce visibility of light sources by shielding the view of the light fixtures when viewed from outside the garage. Techniques include limiting openings or screening openings with architectural and/or landscape elements. Fixture selection should provide for adequate illumination, good color quality (minimum 80 CRI, maximum color temperature 3500K) as well as fixture location, lenses, and type.

D. The interior of the structured and underbuilding garages shall be painted a very light value (white or near white) to improve visibility and reduce contrast.

The landscaping provided on this parking structure help to prevent light spill, glare and reflection.

The interior of this parking garage is light resulting in improved visibility and safety.

E. The design of lighting standards in exposed parking facilities shall be full cut off fixtures and appropriate to the character of the development and abutting areas. Fixtures in parking lots shall be no taller than 15 feet. Fixtures on garage rooftops shall be no taller than 12 feet.

F. Lighting of pedestrian routes through parking facilities (i.e. parking lots and structured parking) shall be provided through the parking area to the building entrance(s).

G. Light standards shall not be located where they may interfere with parking stalls, stacking areas, ingress or egress, or marked pedestrian routes.

Lighting standards for surface parking shall be full cut off fixtures.

17.9 Building Design Standards

A. Lighting shall be designed to highlight primary building entrances or individual entrances to retail uses and residences.

B. Lighting at service station or similar canopies shall be recessed with no lenses protruding below the finished ceiling. Indirect lighting, contained to the underside of the canopy, is also acceptable.

C. Sales frontage (for instance for car lots) and all outdoor sales areas shall be controlled such that they can be reduced to 25% of full output after business hours. Fixtures shall have cut off shields.

Lighting shall be used to highlight primary entrances and related plazas.

17.10 Landscape Standards

A. Landscape and walkway lighting shall be used to accent the views of landscaping and provide security.

B. Street tree design shall be coordinated with street light placement.

C. Outlets in planted areas, especially with trees, should be incorporated to facilitate the use of seasonal lighting.

D. Lighting shall not be permanently attached to trees.

Lighting adds interest and provides along walkways to retail and services.

Figure A. Illumination Level Standards Table

Vehicular circulation	Standard	Minimum average (initial) illumination on the finished surface foot candles (fc)	Average to Minimum Ratio
	See Issaquah Street Standards, Design Section J: Street Illumination		

Local Intersections	Standard	Minimum average (initial) illumination on the finished surface (fc)	Average to Minimum Ratio
	See Issaquah Street Standards, Design Section J: Street Illumination		

Pedestrian Circulation		Minimum average (initial) illumination on the finished surface (fc)	Vertical Illuminance (fc)*
	Pedestrian and Bicycle Trails with a vehicular component (Pedestrian Priority)	1.3	0.9**
		Same as vehicular	70% of horizontal value
	Pedestrian and Bicycle Trails without a vehicular component	0.65	0.65
	Critical Area Trails	no lighting	

* *Measured in a vertical plane, 5'0" above grade.*

** Where security is a concern use 2x the horizontal illuminance level.

Community Spaces	Parks	Designated walking paths intended to be used after dark should be illuminated similar to pedestrian and vehicular trails without vehicular traffic.		
	Plazas	Plazas vary widely in their design. Lighting should be developed to safely illuminate walkways, changes in elevation such as stairs and highlight special feature elements.		
Parking	Standards	Minimum average (initial) illumination on the finished surface (fc)	Vertical Illuminance (fc)*	Maximum to Minimum Uniformity
	Structured above grade parking	1.3	0.65	10:1
	Surface parking and roof top parking	0.3	0.15	20:1

fc = footcandle